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THE JOURNAL OF GEOGRAPHY

A MAGAZINE FOR SCHOOLS

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Miss Broderick is an instructor in the Louisville Normal School, Louisville, Kentucky. She has carried out numerous highly valuable projects in her geography work in the Training School of that institution. "A Contest in Locational Geography" by her was published in the *Journal* for May, 1924.

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Miss Knight is a teacher of geography in the public schools of Omaha, Nebraska. She made an extensive study of supplementary geographical literature the results of which were published by Clark University in bulletin form under the title "A Bibliography of Geographical Literature for Elementary Grades and Junior High Schools." Miss Knight is also author of "The Livestock Industry of Nebraska" published by the Omaha Chamber of Commerce, and "Collecting and Making Use of Local Geography Material" which appeared in the *Elementary School Journal,* February, 1920.

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Miss Broening is Supervisor of Geography in Junior High Schools, Baltimore, Maryland. She was chairman of the committee that produced the "Baltimore Geography Course of Study for Junior High Schools," one of the more notable contributions to geographic education made in recent years.

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Miss Shipman was formerly head of the department of geography in the State Normal School, New Britain, Connecticut and is now pursuing work for her doctorate at Clark University. Her article "Geography in the Fourth Grade" appeared in the *Journal* for February, 1924. Miss Shipman is also author of a "Three-term Course of Study in Geography for Normal Schools" and co-author of a series of "Information—Problem Tests in Geography."

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Dr. Ridgley is a member of the faculty of the "University Afloat"—a completely organized higher educational institution—on a voyage around the world. Other interesting notes of this unique voyage will be published in future numbers of the *Journal.*

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VOLUME XXVI MARCH, 1927 NUMBER 3

DESTRUCTIVE EFFECTS OF A HAIL STORM IN A CITY

EDWIN J. FOSCUE

Southern Methodist University
Dallas, Texas

One of the most destructive hail storms ever recorded in the southwestern part of the United States occurred in Dallas, Texas, at 6:30 P.M. May 8, 1926. This storm is of unusual interest from the standpoint of geography because of the size of the hailstones that fell and because of the resultant destruction of property in the more congested parts of the city.

THE HAIL STORM OF MAY 8, 1926

In the early part of the afternoon of May 8, a low cloud bank appeared in the north, and as it approached the characteristic cumulo-nimbus or "thunder-head" cloud could be seen. By 5:30 o'clock the cloud was near enough for the low rumbling of the thunder to be heard. The storm advanced rapidly, and soon a strong wind came out of the north accompanied by a very heavy downpour of rain. As the storm increased in intensity, small pellets of hail, about one-fourth of an inch in diameter, fell, but this soon ceased. There was a brief lull in the storm, and then—as if the heavens had opened up—all of the rain and hail descended at the same time.

On the campus of Southern Methodist University, which is about six miles north of the business section of the city, and thruout the northern part of Dallas, the hailstones reached a size of about one inch in diameter and continued to fall for about ten minutes, but no damage was done there. As the storm moved southward and approached the business section of the city it increased in intensity and the size of the hailstones increased proportionately. By the time the storm reached the wholesale and industrial district just north of the business section, the hailstones had increased in size until many of them were nearly three inches in diameter. The storm continued on toward the south with this

intensity, causing a great amount of destruction to roofs, skylights, and windows, in the business district, the industrial district south of this, and the residential sections of south Dallas. The intensity of the storm seemed to decrease in the outskirts of south Dallas, altho some hail was reported a number of miles south of the city.

SIZE OF HAILSTONES

The largest hailstones fell in the most congested part of the city at a time when the streets were crowded with automobiles and people, and the destruction was intensified because of this. The hailstones that fell in this section of the city were actually as large as baseballs, and it is estimated that tons of ice descended on the streets and buildings during the brief period from 6:30 to 6:45 o'clock. (Fig. 1) One stone picked up in front of the office of the *Dallas News,* measured about twelve inches in circumference and weighed approximately twenty-two ounces. Most of the larger hailstones had as many as eight concentric rings or layers of ice, and verified the fact that they had been carried up and down in the storm for some time before they could overcome the force of the updraft in the squall cloud and fall to the ground.

FIG. 1. Amount of ice left on the ground immediately following the hailstorm at Dallas, Texas, May 8, 1926. (E. J. F.)

AREA COVERED BY DESTRUCTIVE PART OF STORM

The largest hailstones fell over a strip of territory more than two miles wide extending along the east bank of the Trinity River from northwest to southeast. As the storm approached the city it was moving from north to south, but as it reached the Trinity River bottom it was deflected to the southeast, following the river valley. This seems to be a rather common occurrence in thunderstorms. There was some destruction on the west bank, but for the most part the

damage was confined to the east side of the river and the river bottoms.

The heaviest part of the hailstorm apparently passed over the business part of the city, and it was this section of the city that suffered greatest. The general path of the storm is shown on the

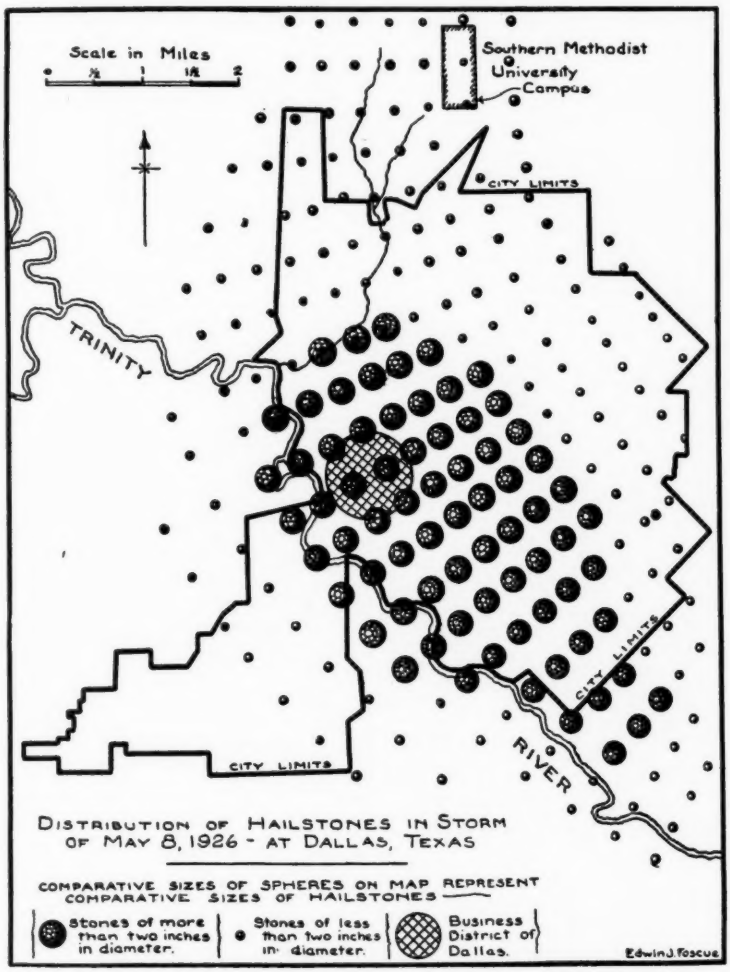
Scale in Miles
0 ½ 1 1½ 2
Southern Methodist University Campus
CITY LIMITS
TRINITY
CITY LIMITS
CITY LIMITS
RIVER
DISTRIBUTION OF HAILSTONES IN STORM OF MAY 8, 1926 - AT DALLAS, TEXAS
COMPARATIVE SIZES OF SPHERES ON MAP REPRESENT COMPARATIVE SIZES OF HAILSTONES
Stones of more than two inches in diameter.
Stones of less than two inches in diameter.
Business District of Dallas.
Edwin J. Foscue

FIG. 2. Map of the Dallas area showing the path of the storm

map (Fig. 2.). This map shows by means of spheres the sizes of hailstones that fell in different parts of the city.

OBJECTS DAMAGED

The destruction of property consisted of the breaking of (1) windows and sky-lights in industrial plants, office buildings, ho-

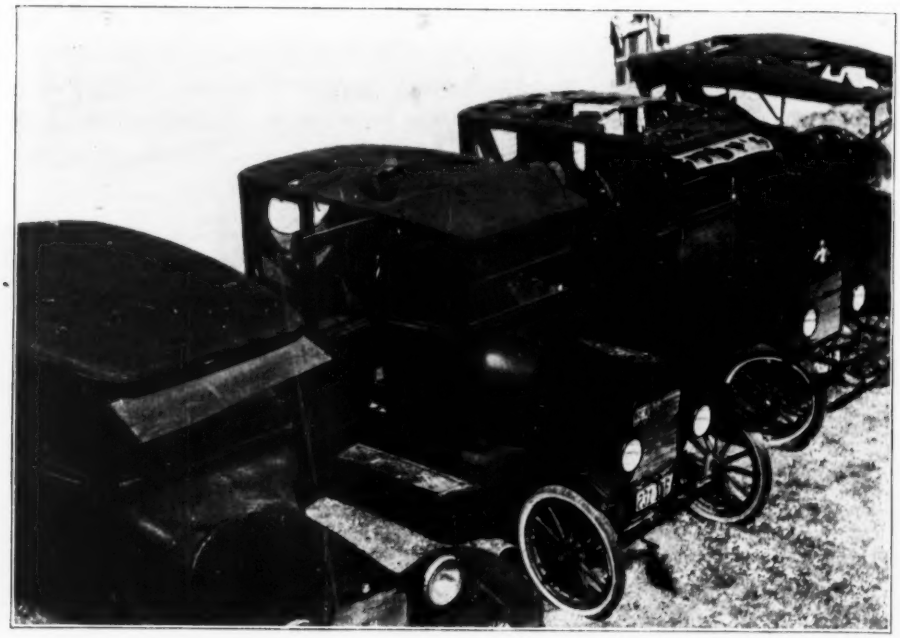

FIG. 3. Typical view in every open-air parking place in the business district, immediately after the storm. Note the hail still on the ground, and also the hailstones in the top of the car to the left. (Photo by G. A. McAfee)

FIG. 4. What was left of a shingle roof on a residence in south Dallas after the hailstorm. (Photo by G. A. McAfee)

tels, and stores; (2) plate-glass windows in stores and shops; (3) street car windows and tops; (4) automobile windshields, glasses, and tops; (5) street lights and electric signs; (6) tile, slate, and shingle roofs in business and adjacent residence sections; and (7) glass roofs of "green-houses" belonging to florist establishments near the business district.

Practically every window on the north side of buildings in the down-town section of the city was smashed by the hail. The Santa Fé Office Building lost a large number of windows on its north side from the street level to the eighteenth floor, which shows that the hail storm was as intense at higher levels as it was on the

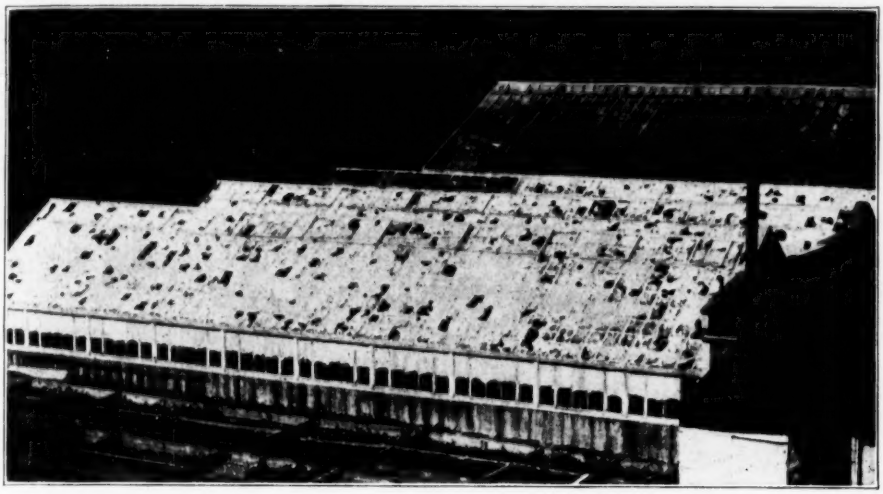

FIG. 5. Practically every "green-house" in the city was riddled by the hail. (Photo by G. A. McAfee)

street. The slate roof on the new First Methodist Church was broken into bits, and represented a total loss. Many of the stained glass windows of the church were also broken.

ECONOMIC CONSIDERATIONS

The actual damage done by this storm will probably never be known, but estimates of the cost of the property destroyed run near the $2,000,000 mark. As mentioned above, one of the heaviest sufferers was the First Methodist Church whose damage to windows and roof was more than $25,000. It is estimated that the loss to automobile owners thru the destruction of tops, windshields, and windows exceeded $100,000.

No fatalities were reported, but hospital records showed that forty people were painfully injured by falling ice and glass. Several head of cattle were killed on a dairy farm just south of the city.

REPAIRING THE DAMAGE

The geographic significance of this storm lies not only in the fact that much of the work of man was destroyed by an element of the natural environment in such a short period of time, but also in the rapidity with which man went to work to repair the damage.

Hardly had the rain ceased falling before squads of men could be seen putting in new plate-glass windows in the fronts of store buildings. Altho the storm occurred after closing hours on Saturday, men worked all Saturday night, and all day Sunday and Sunday night repairing the damage to roofs and replacing broken windows, so that by opening time Monday morning most of the damaged property in the business section had been repaired, and everything appeared in order. The supply of plate-glass, roofing material, and automobile tops in Dallas was rapidly exhausted, and additional supplies had to be brought from Ft. Worth. This supply was also exhausted and additional materials had to be ordered from St. Louis.

One week after the storm there were few evidences left of the devastation, so rapid and so complete had been man's re-adjustment.

FORESTRY—AN EIGHTH GRADE PROJECT

WINIFRED D. BRODERICK

Louisville Normal School, Louisville, Kentucky

AN EXPLANATION

We plan, in our Training School, to have simple commencement exercises for our eighth grade classes at the end of each term. It is customary, furthermore, to have the children report upon some unit of work they have

NOTE: Miss Broderick's students prepared seven excellent illustrations. Unfortunately all except Fig. 3 were lost while in the hands of the engraver and it has not been feasible to reproduce them. Figures 1 and 2 have been redrawn. The positions of Figures 4, 5, 6, and 7 have been indicated for convenience of the reader. The teacher who uses this project may have originals prepared by the students.—EDITOR.

carried out during the term so that their parents may have an opportunity to see just how they study and what they have accomplished.

The children, as a general rule, choose a topic which they have enjoyed especially. They must plan how to present this subject effectively to an audience of grown people. They discuss what subject matter to use and the explanations which will be necessary. Then, from the illustrative material they have used in their class room work, the children choose those pieces which will make clear the points they have decided to present. This part of the planning is under the direction of the teacher whose subject they have chosen.

When this has been accomplished, the work is turned over to the English and Art Departments. There is an opportunity for some good English work. The writing of the talks forms the basis of a number of lessons in composition. The English teacher finds, also, that she may review, to an advantage, the points in oral delivery when she teaches the children how to give their talks. The art teacher helps the children to improve their charts and to enlarge any which are too small to be used in the auditorium. This construction work calls for coöperation and every child seems willing to contribute his share in order to make the finished product something he will be proud to show to his parents and friends.

The following is the children's explanation of a geography unit they worked out in October, 1924, and explained at the February, 1925, commencement exercises. In many cases, they explain their own methods of work and I am giving it to you as they gave it.

THE CONSERVATION OF OUR FORESTS

Introduction

The great number of forest fires which occurred during the dry autumn, this year, caused us to be interested in studying forest fires. Some of the children drove to South Park, Kentucky where several serious fires had occurred; while others found information about fires in more distant areas. To get this information, they read the daily newspapers. One of the first pieces of work we attempted, then, was the making of a map showing the location of these fires. From day to day, as we read accounts of new fires, we marked them on our map in red. For this work we used a large blackboard outline map. Elizabeth Stine will tell you about our map.[1]

[1] I have purposely omitted the map here because the colors did not stand out clearly when we photographed it. I think, however, that from the description given you will have a fairly definite idea of what it was like.

EXPLANATION OF MAP

We made this map of the United States to show where recent forest fires occurred. Before locating the burned areas, we put on the map, in black, the sections of the country which are forested. Here, are the Southern Forests; here, the Northern. These are the Central Hardwood Forests. The white area represents the plains. These are the Rocky Mountain and Pacific Forests. The red paper which has been pasted in spots on the forested areas represents those areas which we found had been threatened by fire. The gray patches are the National Forests of the United States. Some forest fires occurred in these, too, even tho they were carefully protected.

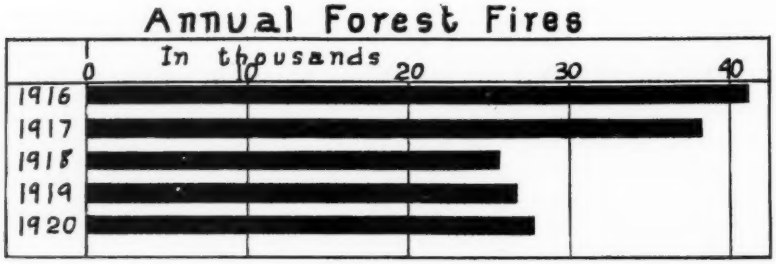

FIG. 1.

At first, we thought that the great number of fires this year had resulted from the exceedingly dry weather this fall. We though, therefore, that the number of fires for other years would be very small in comparison to the number for this year. Investigation proved we were wrong. This chart (Fig. 1.) shows the number of forest fires which occurred annually from 1916 to 1920.[2]

We have no record that all of these years were especially dry. Yet, at least twenty-five thousand forest fires raged in the United States during each of these years. We decided, as a result, that there were other causes of fires. Soon, we were asking what these causes were. Our next step, therefore, was to discuss how forest fires are caused and how they may be prevented. Mildred McCubbins will explain how we carried out this part of the work.

[2] Safeguarding America Against Fire. Published by the National Board of Fire Underwriters with special contributions from the United States Forest Service.

THE CAUSES AND PREVENTION OF FOREST FIRES

Our study of the causes and prevention of forest fires required that we obtain some information. While the books in our school library contained some good material, these were not sufficient for us to use. Therefore, we wrote to the United States Forest Service and the Pennsylvania Department of Forests asking for more information about the subject.

When we received the pamphlets, we had some excellent material for class discussion. We talked of the many causes of fires and the dangers resulting from them. We had a number of pictures to illustrate these points. Finally, two of the boys made a sand table to show what we had learned about the ways in which these fires occurred and were checked. Joe Taylor will explain it to you.

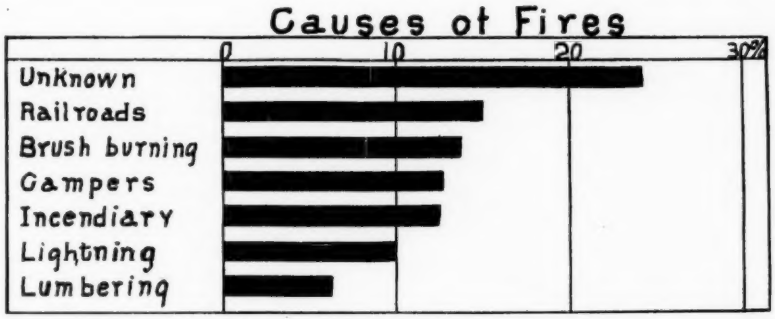

FIG. 2.

EXPLANATION OF SAND TABLE

This sand table[3] illustrates some of the causes of fires and the means used to prevent them. This section shows trees which were ignited by sparks from an engine. Land on either side of the track was not cleared of trees. This area, where you can see many charred trunks, was destroyed by brush-burning. When the lumberman cut the larger trees, they decided to clear the ground by burning the brush. Fire spread into some un-cut forest, near by, and burned the remaining trees so badly that they were of no value for timber. Lightning frequently causes forest fires, too. This

[3] It was impossible to get a picture which would bring out all the detail of the sand table. I am, therefore, not inserting it in this article. The Forest Service furnished a number of excellent photographs showing the activities of the rangers and their assistants. These were exceedingly helpful.

part was burned by lightning. The greatest difficulty with fires of this type is that they cannot be prevented. However, the spread of such fires may be checked if the owners of the forest are careful.

This tower, high on the hill, has been built so that a ranger may overlook the forest of which he has charge. Besides trying to detect fires, the ranger's duty is to extinguish fires. In very dry seasons, he digs fire lanes—such as this one here—between sections of the forests. He does this to check the spread of ground fires.

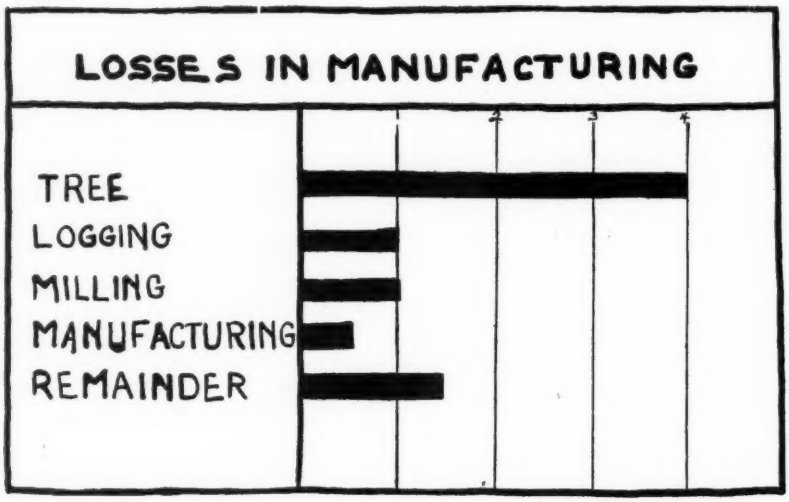

FIG. 3

Some careless campers left their fire, here; and a smoker threw away a burning match. Now, the United States Forest Service has posted a sign, "Warning to Campers" so that similar fires will not occur.

Of course, all these fires did not occur in one forest. We put them together in order to illustrate a number of ways in which forest fires are caused.

This chart (Fig. 2.) summarizes the points my classmate made: 24.2 per cent of the causes of fires is unknown; 14.9 per cent is caused by railroads; 13.7 per cent, by brush-burning; 12.5 per cent, by campers; 12.5 per cent, by incendiaries; 9.8 per cent, by lightning; and 6.2 per cent by lumbering.

This study of the causes of forest fires led us to a very definite conclusion:—

CARE WILL PREVENT MANY FOREST FIRES

OUR BUREAU OF FORESTRY

The work accomplished by the United States Forest Service made us curious to know what the state of Kentucky was doing to protect its trees. The results of our investigation will be outlined by three of the children.

Our investigation proved that the Kentucky State Legislature, after abolishing the office of State Forester in 1921, passed a law, recently, which permitted the governor to appoint a forester. Nothing, however, has been accomplished. The forester has not been appointed, nor has the bureau been established.[4]

Our previous study had convinced us that every state needs to conserve its timber supply. And, certainly Kentucky should do what the other states considered necessary. We decided, therefore, to start an advertising campaign to show the people in our school the serious results which follow lack of forest protection. In order to carry out this work, we had to establish our own bureau of forestry.

We divided into groups, each having special work. One group made all the charts required by the others. Another wrote and gave talks to convince people that forest losses should be checked. We found, also, that we might make a bulletin. Some of the topics we included in it were: "Why Kentucky Needs a Bureau of Forestry," "Causes of Forest Fires," "Use of Forest by Campers," and "How to Prevent Forest Fires."

Finally, we put together some of the material to make a "picture show." Hazel Crask's explanation of this chart is the introduction for our "film."

This chart (Fig. 3) shows the losses in the manufacture of lumber. This is the original tree, represented by four-fourths. One-fourth of the tree is lost in logging. At least an additional fourth is wasted in the milling, leaving only one-half of the original tree to be manufactured. In the factory, one-eighth of the tree is lost. This leaves three-eighths of the tree to be used by the people of the United States.

Our picture show illustrates some of the ways in which this lumber is wasted. Robert Mills will explain it to you.

[4] Since the time this report was made, a forester has been selected and the work of the department has been started.

EXPLANATION OF PICTURE SHOW

This picture shows the waste of timber in the logging. Notice that some of the stumps have been left from two to four feet high. This practice is a very poor one, because:

FURNITURE MANUFACTURERS BUY STUMPS
WHY WASTE THEM?

Fig. 4. Waste Thru Logging

In fact, one veneer mill in the city buys them to use in making fancy figure panels for furniture.

This is a forest fire which was caused by lumbermen allowing a burning brush fire to spread over the forest floor. A slogan we thought would fit it is:

A TREE WILL MAKE A MILLION MATCHES
BUT
A MATCH WILL BURN A MILLION TREES

Fig. 5. Brush Burning

Our next picture shows another way in which lumbermen are careless. Notice that the logs are piled close to the track so that they may be loaded on the cars easily. Notice, too, that much brush has been left lying around. Sparks from the engine might cause this timber to burn. Indeed, losses of this kind occur frequently.

Fig. 6. Careless Shipping Methods

Fig. 7. Waste at the Mill

Our last picture is of the mill yard. My classmates have told you that one-fourth of the tree is lost in the milling. This picture shows how some of the waste occurs. It is true that some of the scrap material is used, now, to furnish power for the majority of lumber plants. But, even this use does not remove all the waste. Therefore, the mill owner piles it in the yard and burns it. A mill owner whose plant is located in the outskirts of Louisville will give away this material to anyone who is willing to haul it from the yard. Nevertheless, he finds few people willing to take it. As a result, he has gone to the expense of buying a special machine to burn the waste material. He prefers this expense to endangering his plant by keeping a burning lumber pile in the mill yard.

Our simple little picture show tried to explain how lumber is wasted in manufacturing. Kentucky manufactures lumber. And, some of this waste goes on in Kentucky. A Department of Forestry which could send out moving pictures to show how this waste might be avoided would check these careless practices considerably.

CONCLUSION

We tried to prove to ourselves that Kentucky needed to care for its forests. After weeks of hard work we were convinced that Kentucky needed to establish a bureau, like those in other states, if it wished to teach its people how to preserve the forests.

You have heard these reports today. We hope that we have been able to persuade you to do your part toward making the Kentucky State Bureau of Forestry a success when it has been established and begins its work of teaching the people of the state how to protect their trees.

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Maps. 1. Forest Regions of the United States
2. National Forests. With transportation routes, supervisors headquarters

A. R. Whitson and T. J. Dunnewald. Keep Our Hillsides from Washing. University of Wisconsin Agricultural Experiment Station. Bulletin 272

SUPPLEMENTARY GEOGRAPHICAL LITERATURE FOR THE ELEMENTARY AND JUNIOR HIGH SCHOOL GRADES

ELLA B. KNIGHT

Dundee School
Omaha, Nebraska

One of the most important factors in successful teaching, is a knowledge of the literature of the subject. Our texts provide a point of departure in the present-day effort to connect the school curriculum with daily experience and to give it not only a cultural but a practical value as well for the individual pupil. It is necessary, for the proper organization of the subject matter, to have a basic text, but, excellent as are our modern texts, the teacher who depends solely on them is losing an opportunity to make teaching vastly more effective and enjoyable.

There is probably no teacher who does not, at times, find even the best text inadequate for the presentation of some topic in which there is especial interest, and who does not turn to the larger volume of supplementary literature for information. We who teach geography are especially fortunate in having a rich collection of writings by geographers, explorers or travelers, educators, naturalists, geologists, and historians whose work is either strictly geographic or has a strong correlation with geography. Much of this literature is adapted to use in school, some of it serves for supplemental or outside reading, and some of it is useful only when it is presented by the teacher.

On account of the scope of his work, the author of the geography text is constantly confronted by the necessity for the elimination of non-essentials, while the author of the supplementary work, in considering only one phase of the subject, has a better opportunity to appeal to the child in his free choice of reading, thru a narrative style or the presentation of a larger body of interesting details.

VARIED CHARACTER OF GEOGRAPHICAL LITERATURE

Supplementary geographical literature, in its wide variety of subject matter and of treatment, makes a correspondingly wide

appeal to individual children and so may captivate the interest of pupils who might not otherwise be interested in the subject. It helps also to cultivate the habit of extensive reading, which is in itself an important phase of education.

A study of this literature makes one conscious of a wide-spread recognition of the interdependence of nations and of the dependence of man upon the natural gifts of his environment—a recognition of great and practical importance in the education of world citizens.

One of the dearest ideals of our public schools is to inculcate in every child a sense of world citizenship which will exclude race prejudice and a contempt for people of other lands whose natural environment and racial inheritance have developed a civilization very different from our own. No school subject has a greater contribution to make to the attainment of this ideal than has geography. It can be presented not only in all formal teaching but in supplementary reading which is suggested for recreation as well.

FICTION AND BOOKS OF TRAVEL

Many books of travel and of fiction written for children have a definite educational value in implanting an intelligent appreciation of people and countries, and thereby add to the effectiveness of directed study. These books are well written, they are based on travel and extensive reading, and many of them contain abundant and excellent illustrations. One series has been written by English-speaking foreign-born men and women, each of whom describes child life and environmental conditions in the land of his or her nativity, for the purpose, as one author states, of leading the children of all lands "to know, love, and understand one another regardless of differences of race, religion, class, or beliefs." A large number of stories, some of them published as series, have been written by educators to describe native child life in many lands, or the experiences of American children traveling in foreign countries or thru our own land. There are also historical stories, founded on fact, in which is portrayed the influence of geographic factors on everyday life. These stories serve excellently to correlate history and geography and are of value as supplementary reading for either subject.

Aside from these narratives, there are accounts of travel and exploration either written directly for children or adapted from

the writings of noted explorers and travelers by collaborators. The illustrations in such works often constitute one of their great educational assets, since the camera has come to be considered indispensable in travel and thru its use we may become familiar with people and places of remote and inaccessible regions where only the most adventurous white men have travelled. The *National Geographic Magazine, Asia,* and kindred periodicals, provide most valuable and inspirational sources of material both for the excellence of their numerous illustrations and for their contribution of the latest scientific information in the field of geography.

Perhaps the most important use of the literature just described is for recreational reading, since much of it does not contribute directly to the work prescribed by our courses of study. It has a definite educational value, never-the-less, in giving an insight into the daily needs, the work and play life, and the ideals of people living under varied climatic conditions in regions of abundant or meagre natural resources, whose life is molded by their environment. Often, if the teacher knows just where to find them, there are passages which describe country, climate, or some phase of life with telling effect, and which may well be used for study references, but these should be given as direct references by the teacher to avoid a waste of time on the part of the pupils. The wise teacher having found such passages, will preserve some notation concerning them, to serve when they may be needed in the future.

GEOGRAPHICAL READERS

Much more closely related to the text is the volume of material found in the supplementary geographies and geographical readers published in this country and in Great Britain. Among the best known and most widely used of these books, are the geographical readers which describe the land, the people, the natural resources, and the industrial and commercial development on each of the continents. In their arrangement of material by continents and by countries, they serve admirably in our schools, where they can be put into the hands of the children for training in research methods of study. Some have been written in series, a single author writing of each continent, and others have been prepared by authors who had an especial interest in the individual continents of which they wrote.

GEOGRAPHIES OF COMMERCE AND INDUSTRY

There are also the economic, commercial, and industrial geographies which furnish excellent reference material in the study of all regions of the earth, and a few of which are written in language simple enough to be used by pupils of the intermediate grades. Some of them are high school and college texts, the work of a number of the ablest American and British geographers, yet they are of value to the teachers and pupils of junior high school grades. When definite authoritative information concerning a world commodity or world trade is sought, such works have proved themselves a practical source of material under proper direction. Abundance of statistical tables, of grafs, and of illustrations, and the direct statement of facts, sometimes yield the inquiring pupil the information he desires after he has searched vainly for it elsewhere.

WORK BOOKS

At least two of our American geographers have prepared outlines for study of the several continents, and these contain practical suggestions for both teachers and pupils in the working out of problems in school or at home. Another geographer in collaboration with other teachers, has worked out a series of graded notebooks containing outline maps and suggestions for illustrative and written material covering the the work done from the earliest grades where geography is taught, thru the high school. These books are designed to be put into the hands of the pupils, but where this is not possible, they serve as excellent guides for the teacher and as reference books for the children.

STATE GEOGRAPHIES

State geographies, used as texts in the states for which they are prepared, are often useful as reference works in other states, either in the study of the region to which the state belongs, or for a special quality in the treatment of a representative industry or an important city.

PRIMARY GEOGRAPHY

It has been said by primary teachers that there is little geographical material suitable for use with younger children, but a visit to the publishers' display rooms, or a study of their catalogs will soon convince one that there is no dearth of attractive litera-

ture for the study of geography in the primary grades. A number of new primary geographies have appeared within the past few years, and a larger number of nature stories with geographic significance and of stories of children of our own and of other lands. In addition to these new books there are a few old publications, like the classic "Seven little sisters," which still enjoy a wide circulation.

General Type

The influence of rivers and oceans on men's lives, the story of physiographic processes operating thru long ages to beautify the landscape and produce the natural gifts by which men live, the conservation of those gifts for the greatest good to the greatest possible number of people, the industrial processes involved in the production and marketing of world commodities, and the geographic factors in the building up of cities or of individual industries —each of these has been the theme of one or more authors of books adapted to school use. These books often present scientific truths and geographic principles in such simple story form that a child finds them attractive and comprehensible.

Classification of Material for Ready Reference

In all supplementary reading there must be a higher purpose than entertainment, if its use is to be justified in the school program. Without a definite aim much valuable time may be wasted even tho the material is geographical. To avoid waste of time and effort, and to train pupils in methods of research, the teacher should know where desired material is to be found, or have at hand some means of locating information concerning the sources of material.

Every teacher needs some readily accessible means of locating material once found helpful. One of the simplest devices is a card file, with information tabulated much as it is tabulated in our public libraries. The main heading on the card may represent the author, the book title, or the subject upon which information is likely to be sought, and the card should contain, for the teacher's greatest convenience, page references for specific references. If the cards are to be arranged alphabetically under authors or book titles, they should contain, besides these items, the name of the publisher and date of publication, the number of pages, and a list of page references for the topics most often studied. If the cards

are to be alphabetized under subjects, they may well contain a list of books and periodicals where valuable information can be obtained. This method of cataloging material has many advantages; it is easily alphabetized, cards can be quickly filled in with the desired information and easily replaced if unsatisfactory, the card file takes little space, and it has been found to be more readily accessible than any other device for reference. With this or another device which the teacher may prefer, the question of preparation for the day's work is relatively simple.

It is impossible in this brief general discussion of supplementary geographical literature to give any adequate idea of the rich possibilities it offers as a field of study. The teacher who undertakes the study of this great volume, finds not only an individual pleasure and inspiration, but a means of service to the boys and girls to whom we would give in their early years, a realization of geography as a vital study of the relation of natural environment to daily life, both in work and in play.

THE LABORATORY PLAN OF TEACHING GEOGRAPHY

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In lining up its teaching and supervisory forces in courses of study building our Department of Public Instruction set up separate committees for history, civics, and geography and continues to have children in the Baltimore public schools come into the vital experiences of these subjects as fully developed and separately defined human sciences. This decision was not arbitrary nor hasty. For professional reasons based on an objective examination of children's needs, instructional equipment and teacher preparation, the Department of Public Instruction organized history and civics (offered as separate courses) under the direction of a supervisor of history and organized geography (offered as a separate course) under the direction of a supervisor of geography.[1]

[1] Course of study in Social Studies: A History and Civics for Secondary Schools. Published 1925; Course of Study in Geography. Published 1926; Geography for Inter-

Varied pupil activities in a geography laboratory period in Gwynns Falls Park Junior High School, Baltimore. The picture shows the teacher working with one pupil using a globe; one pupil studying data in an atlas; an individual consulting magazines; a boy arranging lantern slides on a local industry for use in his report to the class; a pupil chairman helping another pupil use a wall rainfall map of the world; another pupil consulting a wall map to verify data in her text; one girl, having progressed more rapidly than the rest in the completion of her contract, is ready for and is taking the practice test on locations prepared by the teacher on the wall map of the world; five pupils, grouped at one table, are preparing their final report to be presented at the next meeting of the class; other individuals, working alone at their tables are using books, making maps, grafs or posters. ***Each pupil,*** **working at his own rate and to the best of his ability, is *doing what he needs to do,* to complete his contract.**

The geography course of study committee in accepting the responsibility delegated to it by the Board of Superintendents analyzed the unique contributions of this subject to the child's educative experience as well as those habits and appreciations which geography, along with history, civics, the natural sciences and English, develops in boys and girls.[2] Paralleling always its study of geography as a special field of human knowledge was the committee's analysis of what this subject should and could stimulate in the individual child at each grade level.

Out of the consideration of the individual child's capacity to learn arose the realization that a technique of instruction in geography must be developed, providing for the individual differences of pupils. Members of the junior high department of geography have studied intensively in theory and in practice the Dalton and Winnetka plans of individualizing instruction. From their experience with these plans, over a period of three years in addition to two years of previous experimentation in Baltimore, was developed a synthetic plan[3] used in Baltimore in the junior high school department of geography in 1925-26.[4]

This plan is based on these five propositions:

1. Individual difference of pupils and teachers are permanent factors in the teaching-learning situation.
2. A knowledge of the goal and the stimulus of right incentives facilitate learning.
3. Potentialities are children's inheritance, their development being affected by many things, including conscious education.
4. Emotionalized learning is more enjoyable and permanent than that entirely intellectualized.

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mediate Grades—4, 5, and 6. Published 1924; History for Intermediate Grades. Published 1924. Only in the primary grades are the social sciences offered as a unit course. Published 1924

[2] See Geography Course of Study for Junior High Schools, pp. 18-19; 20-24; 183-209

[3] Angela M. Broening, How Should Instruction be Individualized? Schoolmen's Week Proceedings, University of Pennsylvania, 1926, p. 93

[4] Grace D. Broening, An Evaluation of Individualized Instruction in Junior High Schools, experimentally determined. Baltimore, 1926

5. Every subject has certain facts and principles which are fundamental to a child's adequate adjustment to his social environment. His rate of mastering these is a factor controlled by his individual learning capacity, interests and habits.

The features of the laboratory plan outlined here are at present carried out, exactly as described, in two junior high schools. Every teacher in the department is engaged in, (1) finding the teaching point, (2) emotionalizing the assignments which are of varying difficulty and range of pupil interest, and (3) testing with objective achievement tests. The increased pupil progress and the much needed relief to teachers having to handle large classes of pupils—two desirable outcomes of this plan—will be realized thruout the department when the teachers, who are making a further study of the plan as demonstrated in a series of after-school laboratory periods conducted with the same group of junior high pupils, choose to adopt it.

What Happens in the Laboratory Periods?

Conferences held by the teacher at times with the whole class, with a group of individuals, and with an individual as need arises, to accomplish one or more of these purposes:

1. Inspire pupils with the will to succeed in the subject and in certain life activities thru the effective pursuit of the subject.
2. To launch a new unit so that pupils will understand its out-of-school significance, open up for study and discussion relevant problems, and discover ways and means of solving these problems.
3. To develop standards of attainment and suggestive plans for pupil study (See Course of Study, pp. 183-207, 222-6).
4. To encourage good work.
5. To challenge less enthusastic pupils thru wholesome competition.
6. To give special help that pupils need directly from the teacher.
7. To socialize the attitudes, habits and knowledge of each individual thru shared-activity.
8. To have legitimate fun in school.

Conferences are some times held outside of the classroom, e. g., on field trips and in public libraries, museums, etc.

Practice Tests,[5] i.e., tests on the essential facts, locations, etc., so arranged with keys that pupils themselves can score them. These help pupils see how near they are to their goals and help them diagnose for themselves where they need to straighten out their facts and improve their skills as well as aid pupils in clinching the minimum knowledge and skills so that individual interests may have full play. In giving pupils the scope of their job with an entire unit, the teacher must provide milestones (practice material and tests) so that pupils save themselves from straying into an erroneous path, must give pupils practice with satisfaction on what they can learn within their short memory and interest span, and by so doing the teacher will eliminate the waste of old-time recitation period and clear the way of "minimum essentials" so that the exploratory phase of individualizating instruction can become an accomplished fact.

Real Tests,[6] i. e., objective achievement tests to check the pupil's success on the unit of learning he has completed. These tests the teacher marks and records as cumulative data upon which she determines pupil fitness for promotion.

Contracts,[7] i. e., mimeographed assignments on the unit of learning covering several weeks' work. These

1. Help pupil see the scope of the unit of learning.
2. Enable the pupil to progress at his own speed.
3. Keep his assignment definitely before the pupil.
4. Relieve teachers' problems with absentee pupils.
5. Avoid waste of time and inaccuracies which follow when teacher has to write assignments on board or dictate them orally and pupils have to copy or record them in haste.
6. Remove from the Principal some of his difficulties with substitute teachers when regular teacher is absent.
7. Are suggestive to new recruits in a department.
8. Give teacher a stepping-stone (more sure than unaided memory) for better planning the second time she teaches a unit.

[5] See Geography Course of Study p. 150ff for sample.
[6] For sample, see Course of Study, p. 161 ff.
[7] For sample, see Course of Study, p. 144 ff.

9. Capture for her own and the use of other teachers "flashes of creative insight" which come fast and leave faster when the artistic experienced teacher makes only "spontaneous assignments."

Records which serve as spurs to good marks are of two kinds.

1. *Geography Laboratory Progress Graf* which the teacher posts on the bulletin board for each class. Upon the completion of a week's job by the individual pupil, a record of this is made at once, on the laboratory graf by the teacher. It facilitates a rapid recognition of the progress of any individual in any class at any time. It gives also a composite picture of each class and offers occasion for wholesome group competition.
2. *Individual Geography Progress Card* with which each pupil is supplied. On it he records for himself the amount he accomplishes each period in the laboratory and at home. (He fills in his name, etc., at top of card; at the bottom, name of the contract he is working on e. g., "Transportation," and the date and kind of test, i. e., skill or knowledge on contract, when completed.) The practice tests record is not kept on this card. They serve as pupil's self-help not as data for promotional grades. After each period in the laboratory, the pupil draws a line (from the bottom up, for he's climbing the ladder of success) to indicate how much of each week's job he has finished. Beside the line is placed a numeral record, 1, 2, 3, etc., to record on which day of working on the contract he finished that amount. An "h" beside the numeral, e. g., "1h" shows that that amount was accomplished on the first day at home. Each card provides enough columns to care for a semester's work.

This plan was demonstrated by Grace Broening at the meeting of the National Council of Geography Teachers in Philadelphia, December 27, 1926.

CRITERIA FOR CHOOSING AND USING GEOGRAPHIC MATERIALS FOR THE ELEMENTARY GRADES*

JULIA M. SHIPMAN
Clark University

It is safe to say that the geographic materials used must fit the needs of the children for a particular lesson, but it is difficult for one not working daily with a group of children to know their definite and peculiar needs. Generalized statements must be adapted rather than adopted by the classroom teacher. In preparing to teach a geography lesson the instructor may well ask herself: What visual aids does this lesson need? Why those? How shall I present them? Why shall I present them in that way? Have I read enough to give me the necessary background for the questions that will arise? If she can face these questions intelligently she should get worthwhile results.

THE USE OF MAPS

One often hears it said that no geography lesson should be taught without a map before the class. Putting a map before the class will not of itself accomplish the desired ends. I have read that the number of officers in the World War who could not, even after some training, make intelligent use of maps, was rather astonishing. If they had previously studied geography with a map before the class it evidently had not been wisely used. One very important step is the proper introduction to maps. In the primary grades a globe with little detail should be used. When the time comes for using flat maps, simple symbols should be carefully taught thru the construction by the children of diagrams and maps of the schoolroom, schoolgrounds, and neighborhood, and of areas covered in field trips. Place all maps used on a table or the floor, correctly oriented, until the directions are fixed, thus avoiding the terms "up" and "down." "Journeys in Distant Lands" by Barrows and Parker is fruitful in ideas for introducing map study to children. Our first standard might be, begin with simple maps and carefully teach their symbols.

* Presented at the Philadelphia meeting of the National Council of Geography Teachers, December, 1926.

Formerly political maps prevailed in the classroom, but more and more physical maps are superseding them because from these, children can be taught to read reasons for many of the textbook facts. Maps showing rainfall, vegetation, and population distribution should be studied with the relief maps and from them many problems worked out. The child may read, "Japan is overcrowded" or "Bolivia and Paraguay are the most backward countries in South America." The reasons for such conditions may be largely determined from map study and will then be retained long after the words of the text are forgotten. Our second criterion may be stated: Use many maps from which the child can be taught to determine the reasons for life responses.

CHARTS, DIAGRAMS, GRAFS

The use of charts, diagrams, and grafs is associated closely with map study. A rainfall map gives a general idea of arid or moist areas, but a graf showing that the rainfall in the Spring Wheat Region is heaviest in June and July gives specific information. Furthermore it shows that the yearly total is only 21 inches which helps to explain why wheat, but not corn for grain is raised in that section, and why the harvesting does not await a sunny day as in the more humid east. Grafs should be large enough to be read by the whole class at once and their construction and uses taught. Select grafs for specific rather than general information, and especially for comparison of regions. Examples of picture and line grafs may be found in the Smith "Human Geography." Diagrams may also be used if they really clarify ideas. Two good examples may be seen in the McMurry and Parkins "Advanced Geography," of a coal mine on page 32, and of a blast furnace on page 37. Sometimes physical diagrams help to picture the textbook statements, but unless their symbolism is carefully explained pictures tell a more vivid story. The Atwood "New Geography" has a good diagram on page 63, showing a phase of mountain formation. Too many such materials have a tendency to obstruct the lesson rather than to simplify it.

PICTURES

Since we cannot take our classes to see many parts of the world we must bring the world to them, and this is increasingly being done thru maps and pictures. Compare for example a text-

book such as our parents studied with one published in the last few years. No other symbol so vividly portrays the unknown world as a picture, but the scope of each is small, so that many must be shown to give even a general idea of a country or region. Select pictures which have a definite story to tell and that present the usual, rather than the bizarre. We need to study the ordinary vegetation of field or highway rather than an exotic from some garden, and the home of the man-in-the-street rather than the residence of the wealthy. This implies that the teacher must know what the everyday life contacts of the countries studied are.

Lantern slides and pictures large enough to be seen by the whole class are preferable so that the instructor may direct the observation, but pupils may be trained before class, to show pictures to small groups, emphasizing essentials much as the teacher would.

In presenting new terms as, silo, harvester, glacier, volcano, grassland or jungle, pictures convey more real content than pages of text or many words from the teacher, but that does not relieve the instructor from carefully worded descriptions. Every teacher should have a large personal collection of pictures, carefully selected and filed in such manner as to be readily available. The use of manila envelopes with the following classification is suggested:—vocabulary building, scenery, man's activities, plants and animals, the continents.

Stereoscopes and motion pictures are unsurpassed for vividness, but they are not so available as textbook pictures, postcards, and others found in magazines and newspapers. Select pictures for quality instead of quantity and train the children to use them as an aid to clear-cut thinking and organization of ideas.

SPECIMEN MATERIALS

Other geographical materials include industrial exhibits, and specimens of products, as cotton, cereals, metals, or some manufactured articles. Some of these should be in every schoolroom and used as collateral, not supplementary, aids. All materials should be presented with the lesson they elucidate, not at some later or more convenient time. This idea is well brought out in the Barrows and Parker geographies with respect to maps and pictures. Making sandtables, or dressing dolls, and other construction work if really done by the children may have considerable

value, but must not be permitted to get in the way of the aims of the lessons. Let us remember that actual observation of the world around is the best visual aid and may be used again and again in correlation and comparison.

THE TEACHER A VITAL FACTOR

After all, the main point is that the teacher must be so full of her subject that she can use whatever material comes to hand. She must know this material, be it story, supplementary reader, map, or graf, so well that she is not afraid of the children's questions and lastly the value must be compatible with the time spent.

COLLEGE CRUISE AROUND THE WORLD*

DOUGLAS C. RIDGLEY
Member of University-World Cruise

GREAT CIRCLE SAILING

On leaving Los Angeles, we learned that our ship would follow the Great Circle to Hilo, the chief port of the Island of Hawaii, instead of the direct route known as the rhumb line or the loxodromic line. The true direction from Los Angeles to Hilo is West 24° South. The Great Circle route lies along a curved line on the northward side of the direct route. The shortest distance between any two points on the earth's surface is an arc of the great circle passing between the two places. The saving of distance is not great in low latitudes, but it becomes considerable in middle latitudes and high latitudes. The direct route from Los Angeles to Hilo is 2,145 miles, the Great Circle route is 2,133 miles. This gives a difference of only twelve miles, or a saving of one hour of time, at the rate of travel for the College Cruise. The direct route from San Francisco to Yokohama is 4,739 miles, while the Great Circle route is 4,495 miles. The distance saved by the Great Circle route between San Francisco and Yokohama is 244 miles, or 20 hours at the rate of the College Cruise.

* In this report Dr. Ridgley describes some of the items which have been of special interest while crossing the Pacific. Unfortunately this report did not reach our office in time for publication last month. Are your students following this World Cruise? EDITOR.

Theoretically, great circle sailing would require constant change in the direction of sailing. In practice, the captain determines each day at noon the direction of the sailing course for the next 24 hours. The position of the ship is determined accurately each day at noon by measuring the altitude of the sun at noon, and by comparing the local time of the ship with the Greenwich time as indicated by the ship's chronometer which registers Greenwich time.

Each day at noon, while sailing from Los Angeles to Hilo, the ship's position was determined. The amount of movement due to wind and current was calculated, and the course for the next 24 hours computed. The following table shows the direction of the ship's course, day by day. The course was not exactly on the great circle, but near it at all times.

DATE	DIRECTION
October 11	West 14° South
October 12	West 19° South
October 13	West 20° South
October 14	West 25° South
October 15	West 26° South
October 16	West 29° South
October 17	West 29° South
October 18	West 35° South

The faster steamships, sailing 500 miles, or more, per day, change their courses twice every 24 hours in order to keep near the Great Circle.

SAILING ON THE RHUMB LINE

When our ship left Honolulu for Yokohama, a distance of about 3,400 miles, the Captain had the choice of two routes:

1. The Great Circle route which is the shortest distance between the two ports, 3,403 miles.

2. The more southern route which lies along the rhumb line, or direct route, West 11° North, to a point at sea 30° North Latitude, 150° East Longitude, thence to Yokohama, West 29° North, a total distance of 3,522 miles.

The distance saved by the Great Circle route would be 119 miles, or 10 hours at our regular rate of 12 miles per hour.

The Great Circle route would carry the ship farther into the westerly winds than the more southern route, with greater likelihood of finding stormy weather. The more southern route was chosen and our course lay for more than 10 days in the northeast trades and the horse latitudes with fair weather, gentle breezes, light winds, and occasional calms. The noon position, day by day, was about 1° farther north, and about 5° farther west than on the previous day. Each day's run was between 280 miles and 300 miles. The noon position of the ship, day by day, while on the rhumb line from Honolulu to 30° North Latitude and 150° East Longitude is given in the following table:

DATE	LATITUDE	LONGITUDE
October 22	21° 41′ North	161° 43′ West
October 23	22° 38′ North	166° 56′ West
October 24	23° 36′ North	172° 08′ West
October 25	24° 32′ North	177° 28′ West
October 26	Lost Day	Lost Day
October 27	25° 26′ North	177° 00′ East
October 28	26° 26′ North	171° 55′ East
October 29	27° 12′ North	166° 56′ East
October 30	28° 11′ North	161° 24′ East
October 31	29° 09′ North	155° 53′ East
November 1	30° 03′ North	150° 31′ East

At noon, November 1, the course of the ship was changed to West 29° North. The noon position for each day thereafter was as follows:

DATE	LATITUDE	LONGITUDE
November 2	32° 09′ North	146° 10′ East
November 3	33° 38′ North	142° 33′ East
November 4	34° 57′ North	139° 43′ East
November 5	35° 27′ North	139° 39′ East
		At Yokohama

THE LOST DAY, TUESDAY, OCTOBER 26, 1926

The International Date Line lies, for most of its course, on the 180th meridian of Longitude, East or West, from Greenwich, London. Our ship crossed the 180th meridian on Monday night. We therefore went to bed on Monday night, October 25, and awoke the

next morning on Wednesday, October 27. We experienced no Tuesday, and we did not live during the date known as October 26, 1926. Classes that had their schedules for Monday, Wednesday, and Friday, met two days in succession, Monday and Wednesday. Classes scheduled for Tuesday, Thursday, and Saturday, had no meeting date after Saturday, October 23, until Thursday, October 28. From Sunday, October 24, to Sunday, October 31, there were only five intervening days, not six, as usual between two consecutive Sundays.

Since leaving New York, September 18, we have been sailing westward, toward the setting sun. Each sunset has been a little later than the previous one. Each evening, one of the ship's officers placed a notice on a special bulletin board stating how many minutes the clocks of the ship would be turned back at midnight. In crossing the Pacific, this notice usually read: "The clock will be set back at midnight 20 minutes." Sometimes it gave 19 minutes, 21 minutes, or 22 minutes. When we reached the International Date Line we had turned our watches back a total of 7 hours. When our watches read noon, Monday, October 25, the clocks at New York read 7 P.M. Monday, October 25. If we had kept turning our watches back without changing the date we would arrive at New York on Sunday, May 1, 1927, according to our reckoning, while the people in New York would be busy at work on Monday, May 2, according to their calendar. Each day at New York has been the mean solar day of exactly 24 hours. While sailing westward, each of our days has been somewhat longer than the mean solar day. In crossing the Pacific, each day has been about 24 hours, 20 minutes in length. While in harbor, we keep the time of the seaport, and make no change of time. If we sail due south or due north during a day at sea we make no change of time. While proceeding southwestward from New York our daily movement westward was slight, and we turned our watches back 7 minutes one night and 9 minutes the next night. When we turned southeastward to reach Havana, we turned our watches forward 15 minutes. On entering any port, the ship sets its clocks with the local time of the port, whether this agrees with the longitude position of the ship or not.

As we approached the International Date Line on Monday, October 25, we still had the same day as New York, but our clocks were 7 hours behind the standard time of New York. We then

skipped Tuesday, October 26, and began the next day as Wednesday, October 27, 1926. When we had noon, Wednesday, October 27, New York clocks read 7 P.M. Tuesday, October 26. Our clocks were still 7 hours apart, as on Monday, but by skipping, or losing, Tuesday, October 26, from our calendar, we were now 17 hours ahead of New York time. We had Wednesday and New York had Tuesday. As we continued westward across the Pacific, we continued to turn our watches back about 20, 21, or 22 minutes each day until we reached Yokohama. As we go southward and somewhat westward to the Philippines, our daily changes will be less than in our westward course on the Pacific. As we cross the Indian Ocean, the Mediterranean Sea, and the Atlantic Ocean, we shall turn our watches back each day as indicated on the special bulletin board for time changes. From the time we crossed the 180th meridian until we reach New York, we will turn our watches back a total of 17 hours. This added to the 7 hours already lost when we arrived at the International Date Line, will make a total of 24 hours, or one full day. Our watches and our calendar will agree with the clocks and the date at New York.

Our days have been lengthened, bit by bit, so that we have lengthened the days by a total of 24 hours. We will see the sun rise, run its course thru the sky, and set one time less than our friends at home. The number of meals served on our cruise around the world will be three meals fewer than served at our homes. We have lost one day, having had one day less than our friends at home. But we have not lost a single hour, for we have lived as many hours as our friends at home; 24 hours have been distributed, bit by bit, among our 226 days of daylight, which have been 227 days at home. We provided for the "lost day" in the mid-Pacific so that our days of the week and dates of the month will be the same as at the seaports and the home port at which we are to go ashore.

Had the College Cruise left New York at the same date, September 18, and proceeded eastward along its course, there would have been no "lost day," but there would have been a "repeated day." If the Cruise going eastward had approached the International Date Line on Monday, we would have had the interesting experience of going to bed on Monday night and waking up on Monday morning, living the same day of the week and the same day of the month over again. Monday classes would meet on the

next day which would be Monday. The days intervening between Sunday and Sunday would number 7, instead of 6, as usual, or instead of 5, as on the Cruise going westward. We would then have seen the sun rise, run its course, and set one time oftener than at home and two times oftener than on the Cruise traveling westward. The number of meals served on the Cruise traveling eastward would be three meals more than served at our home, and six meals more than served on the Cruise traveling westward. The classes in the College Cruise around the World would meet one day oftener than the classes in the home college and two days oftener than in the College Cruise going westward.

The students of the College Cruise were greatly interested in the Lost Day and its consequences. They seemed to be in favor of making the cruise westward rather than eastward, as far as the dateline experience are concerned. Can you tell why?

THE INLAND SEA OF JAPAN

On Thursday evening, November 11, we sailed from Kobe for a journey of 240 miles thru the Inland Sea of Japan. This name is applied to the arm of the ocean lying between the western end of Honshu, the largest of the Japanese Islands, on the north, and the islands of Shikoku and Kyushu on the south and southwest. The Inland Sea is from 8 miles to 40 miles in width. It is connected with the Korea Strait by the Shimonoseki Strait, a little more than a mile in width.

During the daylight hours of Friday, November 12, we were near the shores of islands on both sides. The land rises with steep slopes to the height of low mountains. The mountain sides are covered with forests. A small amount of the region is cultivated on terraces. A village is located on the seashore where the terraces are best developed. The Inland Sea furnishes excellent views of scenic beauty among its many islands and their steep mountain slopes, but the population of the immediate shores seems to be exceedingly sparse.

At noon, we dropped anchor near the island of Miyajima, and were transferred by ferry to the island. Here we visited the shrine, walked among the forest trees, and examined the numerous articles of trade in the many shops. Our party was met on the island by a group of school girls and their teachers from a mission school at Hiroshima, a city on the main island. They had come

as our guides and interpreters. Some of them were American girls whose families were living at Hiroshima. The Japanese girls had learned English and were pleased to talk with us and to act as our interpreters in making purchases. We made the acquaintance of one of the teachers who had been in the school for eighteen years. The woman who opened the mission school forty years ago is still its active principal.

At four o'clock we were again sailing on the Inland Sea. The island shores on both sides gave close views of land which we had not experienced until today in our journey of twelve thousand miles since leaving New York, September 18. As the sun dropped behind the mountains, the islands were outlined in the twilight, the outlines growing dimmer and dimmer until lost in the darkness.

In Shimonoseki Strait

At daybreak, November 13, we found ourselves sailing into a narrow strait with a swift tidal current running from the ocean into the Inland Sea. Scores of small fishing boats were already busy seeking the day's catch. A number of large steamers were at anchor in the strait, some of them taking on coal. Moji, on the south side of the strait, is one of the great coaling centers of Japan.

Our steamer had taken on coal at Honolulu. Since then we had traveled nearly four thousand miles and our coal supply was low. We needed two thousand tons of coal to fill the bunkers. Our ship anchored in the strait. It had hardly come to a full stop when two tug boats, each with three barges of coal, came alongside the ship, one tug boat and its barges on each side. Each barge carried about eighty tons of coal. In a few minutes scaffolds were raised from each barge and attached by strong ropes to the ship. Each scaffold had five long broad steps, leading from the barges to the side of the ship. The top of the scaffold was just below the chutes leading to the coal bunkers of the ship.

Almost like magic, forty Japanese workers on each barge sprang to their places for rapid transfer of the coal to the boat. A double line of workers on each scaffold led from the coal in the barge up the scaffold to the coal chutes. From our vantage point on the decks above, we observed the groups of organized workers carry on their important task. The coal was transferred from barge to ship by means of shallow baskets which held twenty or

thirty pounds of coal. With two swift strokes of a rake-like shovel, a worker filled a basket and set it to one side. A continuous line of workers stood near each other so that the baskets were picked up in the barge and moved continously and rapidly to the foot of the scaffold and up its full length without any worker moving a single step. A basket of coal was moved from one worker to the next in less than two seconds. We carefully timed the journey of many baskets from barge to chute to find that the journey was accomplished in a period of four to seven seconds. We counted the number of baskets emptied by one man into the chute and found that he was handling forty to fifty baskets per minute.

Two or three hours were required for unloading one barge of its eighty tons of coal, but six barges were being unloaded at one time. Barges loaded with coal were kept alongside those being unloaded. An empty barge was pushed away from its position and a loaded barge brought to position in five minutes.

The workers were nearly all men. Two or three women were working on each barge. They usually handled the empty baskets. A woman stood on the top step of the scaffold. When three empty baskets were placed in a pile, she picked them up and skillfully threw them to that part of the barge where they were needed. They fell in the open spaces among the workers in the barge and were quickly refilled.

In fifteen hours, two thousand tons of coal had been placed in the ship's bunkers by the active and well-directed efforts of several hundred workers, loading the barges at the docks and unloading them at the ship. The time consumed is less than would be necessary to load the ship at coal docks equipped with modern machinery but operated by a relatively small number of men.

As soon as the loading of coal was completed, the ship sailed on its two day journey to Shanghai.

WITH THE SPANISH AVIATORS

ALICE BUNDY.

Central Junior High School, South Bend, Indiana

Our pupils showed such an interest in the articles on Commander Ramon Franco's dash to Buenos Aires and nearly all of their note books contained clippings about his flight and pictures of his seaplane, of Franco and his companion, so I decided to use his flight in our study. We have homogenous grouping which is based on mental tests made at the time of entrance in our public schools, then again at the time they enter the junior high school, and at any time misfits are adjusted. In 7 A we have six groups. This work was given to the 7 A^3 group which had completed the work on the continents and were ready for a study of the winds.

INTRODUCTION

When I suggested that we might write a diary for Commander Franco, they were enthusiastic. Our list of some of the things we thought we ought to know in order to write the diary included something about a seaplane; the route as to places of stopping, winds, temperature, latitude; something about the people whom he saw and met.

PREPARATION

We made diagrams, showing a vertical section of the movements of the air in our room, then a vertical section of the movements of the air on the earth. We made a drawing showing the shifting of the wind belts. Then on an outline map of the world we showed the position of the wind belts at the time of Franco's blazing a trail across the South Atlantic. We also indicated his course on the map, showing the "hops" and length of each, and printed the names of the cities visited. Our map showed the position of the tropics and equator. We had lantern slides showing scenes in Brazil and Uraguay, views of Rio de Janiero, Montevideo and Buenos Aires. We looked at pictures of air ships and collected pictures of areas in which he stopped.

READING THE DIARIES

The reading of the diaries brought out a discussion of the climate of southern Spain and the climatic changes the fliers would notice on their route, the direction of the wind, the temperature

and if the seaplane was at any time in the region of the antitrades. This brought into use the isotherms and latitude. Some of them spoke of freight vessels and their cargoes crossing the Atlantic. One girl told that she read that some freight vessels were caught in a hurricane under the seaplane in the North Atlantic. Some of them described the harbor of Rio de Janiero, the breakwater at Pernambuco, and the dredging of the Plata River were mentioned. Some one discovered that Brazil, Uraguay and Argentina have standard time. Some of the questions that arose were what was the purpose in making this flight? Why did they make Buenos Aires their destination? How long did it take Columbus to cross the Atlantic? What are some of the probable results of the flight?

The pupils showed a growing interest in this study, and at the completion of the work the feeling of having achieved something worth while seemed to permeate the whole group.

EDITORIAL NOTES

The Nebraska chapter of the National Council of Geography Teachers is continuing to issue its monthly bulletins. The one for December featured devices by which the teaching of locations is stimulated.

Our Minnesota Forest is the title of a sixteen page pamphlet published by the Minnesota Arrowhead Association, Duluth, 1926. It was one of the many devices used to enlighten the public on the meaning of the reforestation amendment which was submitted at the November election. This amendment to the State Constitution was adopted. Minnesota teachers, especially, will find the pamphlet very useful in their classrooms.

Thus far the summer pasturage of some of our sub-polar and polar regions is not being utilized for lack of a profit-making domesticated animal that can resist the rigorous winters. Such an animal may be forthcoming if the attempts at crossing Galloway cattle with the Asiatic yak prove successful. Fox farming and reindeer domestication have proved so successful that attention is being directed to the caribou and muskox. Possibly they, too, may become a source of meat, milk, hides, and power.

The *Hispanic American Historical Review* is conducting in the field of its interest a survey of the research, both in progress and contemplated, engaged in by teachers and graduate students in the departments of history, political science, economics and geography of the colleges and universities of the United States. The aims of the survey are to show the interest and activity of investigators in the field, to prevent duplicated effort and to enhance co-operation. Questionnaires are to be sent to all persons concerned, and the results are to be printed in the *Review*. Volunteer information will be welcomed and may be sent to Prof. A. Curtis Wilgus, who is in charge of the survey, in care of the history department, University of South Carolina, Columbia.

Is a city required to furnish unpolluted water to its citizens? This question has been brought to the attention of the public following an outbreak of typhoid fever in an eastern city. One of the afflicted took his case to court and obtained $3,000 damages for injury to his health. The city is taking the case to a higher court.

The woodwork in certain Pacific Coast cities is being seriously damaged by the ravages of white ants. Some of these cities are adopting clauses in their building codes that will necessitate some chemical treatment or insulation of woodwork to protect it from these ants. Pasadena declares that in the past year the ants have damaged half of its business buildings.

The All-America Standards Council, with headquarters in San Francisco and Washington, D.C., is urging Congress to pass legislation establishing the general use of the metric units after 1935. All who are interested in the adoption of standard units of measure in America are urged to write their Congressmen.

The cultural value of geography was the theme of Ex-President Suzzalo's address to the Geography Council of the Oregon State Teachers' Association on December 29. More than three hundred were in attendance. This great interest in geography was no doubt stimulated by the helpful program and the personal invitations to the meeting sent out by Miss E. Moore Neave of Hood River, President-elect of the council. Dr. Warren D. Smith of the state university enthusiastically reports the support that educators within the state are giving to geography.

Three successful flights mark the progress of polar aviation during 1926. Previous to its flight, each expedition made a forecast of arctic flying conditions, and then proceeded to prove the truth of its contention. This is the opinion of Stefansson, writing on new polar trails in the January *Forum*. The Detroit Arctic Expedition, captained by George H. Wilkins, demonstrated that climate is not a barrier to winter flying in arctic Alaska. The problem of night flying there is no worse than that of night flights in unlighted routes of the United States. Captain Byrd in his airplane and Amundson and Ellsworth in their dirigible proved the North Pole was attainable by both of these aircraft. To be sure the Norge was crippled by the accumulation of hoar frost which, on loosening, fell against the propeller blades and was batted into the gas envelope. This difficulty in the future will be averted by adding the aëronautical equivalent of our automobile mudguards. Successful Arctic flying will lap off a great many miles in all-around-the-world flights.

The food supply of China could be doubled by agricultural expansion in Manchuria, Mongolia, Tibet and the western provinces. This is the opinion of Dr. Shih Tsin Tung, writing in *Scientific Monthly*, November, 1926. At present only about 9 per cent of the total area of China is cultivated. Thru scientific agriculture, certain parts of this vast unproductive area could yield cereals, and its grass lands could pasture stock. Dr. Tung believes that the area about Peking could develop a packing house business comparable to that of Chicago, and thereby help raise the standard of living among the millions of people in eastern China.

The greatest farmer in the world is the United States Fruit Company, which controls one-half of the banana industry of the world. So writes Victor M. Cutter, president of the United Fruit Company, in *Economic Geography*, October, 1926. This company owns more than a million and a half acres, and leases a quarter million acres. Its plantations are widely distributed in order that possible losses from tropical

cyclones shall not be overwhelming in any one district. When new plantations are opened, the underbrush is cleared away and the banana cuttings are planted. Before these cuttings sprout, the big trees of the jungle are felled, and are allowed to remain on the ground. These tree trunks rot in two or three years, thus making a mulch for young banana trees. The banana exhausts the soil in ten years unless it is rotated with other crops. Herein lies a real problem since there are so few tropical crops that can be used in profitable rotation.

Because of the light precipitation of Greenland, many have wondered at the maintenance of its ice cap. One explanation for the supply of ice is connected with the Greenland anticyclone. Very humid air drains from high levels on to the surface of the cold ice, thus making "frost snow" which nourishes and maintains the ice. Taken from "The First Greenland Expedition of the University of Michigan." *Geographical Review*, January, 1927.

GEOGRAPHICAL PUBLICATIONS

W. G. Burroughs. **The Geography of the Kentucky Knobs.** 284 pp., 7 maps, 28 tables and 49 photos. Kentucky Geological Survey, Frankfort, Kentucky. 1926.

This intensive study of the knob region of Kentucky adds another volume to the valuable series of geographical studies on the physiographic regions of the state. In chapters one, two and three, space relationships, physiography, geology, and climate are presented with their bearing upon resources and their relationships to human activities are interestingly suggested. Chapters four and five present a thoro analysis of natural resources and of economic conditions. Relationships are treated with great care and accuracy; the effects of the various environmental factors upon the economic, social and educational practices are clearly indicated. Present development and future utilization are discussed. Good practice is commended and practicable suggestions offered for other adjustments which will lead to better utilization and conservation of resources. Among these are (1) preservation of forests on rough areas, (2) reforestation of denuded slopes and worn out areas, (3) better drainage along rivers, (4) more grazing and dairying, (5) scientific farming, (6) poultry raising, (7) fruit production, (8) wider use of cover crops, (9) development of the brick and tile industry. These five chapters might be regarded as Part I of the geography.

Chapters eight to twelve include an adequate treatment of the relationships suggested in the earlier chapters. It is helpful to regard them as Part II of the volume. They deal with life conditions in rural districts, highways and transportation, clay mining and clay industries, cities and manufactures, and population and wealth. It is shown that life conditions in this region are largely the reflection of its geology, physiography and soils. Striking but characteristic contrasts are brought out between the prosperous dwellers on the limestone areas or in the alluvial "bottoms," and the poorer folk of the shale districts. The influence of topography is equally strong in determining the location of routes and towns and this is reflected in the distribution of wealth and population. The economic possibilities of the clay industries are effectively shown. One wonders why this was not included with other natural resources.

Chapters six and seven include extremely interesting material on prehistoric people of the knobs, and early settlement and development. However, these chapters impress the reader as rather irrelevant. They break into the logical development of

chapters one to five (Part I) and into the discussions in chapters eight to twelve (Part II) which constitute the real and most excellent "Geography of the Knobs." One wishes that they might be expanded into a separate booklet on the historical geography of the region.

The author closes with a compact and inclusive summary. Excellent statistical tables and a useful bibliography are appended.

ELLA JEFFRIES

Western State Teachers College,
Bowling Green, Kentucky

Aladár E. Illés and Albert Halász (Editors). **Hungary Before and After the War in Economic-Statistical Maps.** 14½ x 10¼ inches, 159 pp., 27 diagrams and 123 maps. Institute of Political Sciences of the Hungarian Statistical Society, Budapest, Hungary. 1926. $5.00.

This atlas is a successor to "The Economics of Hungary in Maps," and compares the pre-war and post-war Hungary by an extensive series of maps and diagrams. The maps are in color and cover the area of Hungary as it existed before the war. Within this pre-war area are drawn the boundaries of the post-war Hungary as the nation exists today. In this manner the relation of Hungary to its detached areas is shown very strikingly. Data for both 1913 and 1925 are given for many subjects portrayed. The maps and diagrams cover physical features, interior traffic and foreign trade, energy resources and production, population and cultural features, credit institutions and finance, agriculture, forestry, livestock, and manufacturing and mining. There is also a large ethnographical map in colors on a scale of 1:1,000,000. The volume contains a vast amount of very useful information and is a highly creditable piece of work. It is invaluable to every student of European geography and should find a place in all our college and university libraries. Its appearance in English will aid greatly in a more accurate understanding of Hungarian geography and economics.

G. J. M.

J. Russell Smith. **Home Folks: A Geography for Beginners.** 250 pp., numerous pictures, maps and drawings. John C. Winston Company, Philadelphia, Pa.

Numerous attempts have been made to write a geography textbook for beginners and at last the formula seems to have been discovered. In "Home Folks" Dr. Smith seems to have combined the right ingredients in their proper proportions—materials suitable for almost any region, a style vivid, smoothly flowing and interesting, a story with plenty of action even for the most restless youngster.

In "Home Folks" Dr. Smith has presented a series of interesting stories of city and country life. Thru these stories he introduces the essential elements of home geography and lays the foundation for the more formal geography of the intermediate grades. In Part I Jack Reed visits his relatives in the country and becomes acquainted with farm life. He helps to put in the crops and to harvest; he goes picnicking in the woods, he learns of forest fires and the value of trees; he visits the country school and attends the "Corn Club" and the "Canning Club." He goes on a rabbit hunt and finds out what fun a snow storm is. Thruout his adventures he notes the relations between the life here in the country and his life in the city. Later his cousins come to the city and he takes them to the big stores, the markets, the factories and to the docks to watch the great ships come in. They watch a banana ship unload; they follow the making of a suit of clothes from the cutting of the

cloth to the finished product; they visit a radio station; they wander thru the crowded streets and study the numerous activities of city life, noting how the products of the farm are changed into manufactured goods and sent out into the world.

The pictures and sketches are numerous, new and seem to be prepared especially for the stories. This unusual fact adds much to their value and interest. The map concept is built up gradually from a simple sketch map of the farm, then the farm neighborhood and village, and finally a conventional map of a region and of North America. The vocabulary and sentence structure are suitable for third grade children. Many worthwhile suggestions of "Things to Think About and to Do" are given thruout the book. After using this book children should have vivid concepts of life in city and country and their interrelations. They should have not only an introductory knowledge of but a keen interest in the crops, the products, the trade, the transportation and the industries of our country. They should have built up also concepts of physical features such as: valleys, plains, hills, rivers, creeks, bays, and how man uses them. Taken in all, "Home Folks" is a welcome addition to our third grade textbooks.

ZOE A. THRALLS

State Normal School,
Indiana, Pa.

M. L. Bynum. **International Trade in Coffee.** Trade Promotion Series No. 37. Bureau of Foreign and Domestic Commerce. 103 pp. Superintendent of Documents, Washington, D. C. 1926. 20 cents.

This bulletin gives the trade from countries that produce the coffee, the deliveries into the countries that consume it, and the per capita consumption by nations. The most significant increase in coffee production has taken place in Colombia, which raised its export from 4.3 (1909-1913) to 9.1 (1919-1923) per cent of the world's coffee production. This increase, together with increases in the Dutch East Indies, Africa, and Central America, has reduced Brazil's export in the same years from 69.7 to 62.4 per cent. The United States takes almost half of the world's coffee. France is the largest European importer, while the Scandinavian countries are the greatest consumers per capita.

The Brazilian government no longer regulates prices by the practice of valorization, the outstanding feature of which was to purchase large amounts of coffee and temporarily withhold them from market during seasons of exceptionally favorable yields. Instead, the coffee industry is controlled by the São Paulo Coffee Institute, a semi-official body which restricts the daily entries of coffee into Santos, and thereby regulates the monthly exportations. It is expected that a bulletin of these price-fixing devices will be forthcoming.

CORA P. SLETTEN

State Teachers College
Mankato, Minn.

William H. Kilpatrick. **Education for a Changing Civilization.** Macmillan Company, New York, N. Y. 1926.

Many geography teachers confine their reading to books dealing exclusively with the subject matter side. They forget that they are teaching children. They forget that they must apply principles of education if their teaching is successful. They fail to realize that they must have a philosophy of education. In this little book, "Education for a Changing Civilization," Dr. Kilpatrick not only embodies his philosophy of

education but opens up numerous fields of thought for every teacher who is concerned with the relations of his subject to present day conditions and the preparation of children for our ever-changing civilization. Geography instructors in particular will find many suggestions and much food for thought in Dr. Kilpatrick's discussion of the characteristics of present civilization and the problems which it is forcing upon education. How can geography meet this—"Breadth of view, felt relatedness of one's work with the rest of the social process, interest in and co-operation with the social whole, additional interest in life—there are the more insistent demands which a growing specialization makes upon life and accordingly upon a proper scheme of education"? Many other such challenges are given in this little volume, every word of which is significant. Read and think, geography teachers!

ZOE A. THRALLS

State Normal School,
Indiana, Pa.

Sixth Annual Report of the Federal Power Commission. 273 pp. Government Printing Office, Washington, D. C. 1926.

The commission reiterates its belief that a primary factor in stimulating great water power developments is the protection afforded large investments by the provisions of the Federal Water Power Act. During the past year, twenty new projects were started which on completion will have 1,220,000 horsepower. Among the largest of these developments are those on the Coosa River, Alabama, on the Ohio at Louisville, and on the Susquehanna in Maryland and Pennsylvania.

Before any projects can be licensed, the commission makes field investigations, checking the public lands and withdrawing them from entry. It examines the plans of the project, passes judgment on the apparent safety of the dam to be erected, and studies the probable effect the project will have on the river as a whole. If the power development conflicts with the scenic and recreational value of the stream, the commission must try to adjust the two interests.

These are but a few examples of the work done by the commission. It recommends larger appropriations and the appointment of a larger staff in order to expedite the work that devolves upon it. The appendixes give the details of the annual proceedings of the commission.

CORA P. SLETTEN

State Teachers College,
Mankato, Minn.

NEW RESEARCH BUREAU

The National Council of Geography Teachers have decided to established a Research Bureau in Educational Geography in the office of its Secretary. It is the purpose of this Bureau to prepare a list of research studies that have been made and are in progress so that anyone planning to undertake a particular study may ascertain what has been done and what is being done by others. It is believed that such co-operative effort can be mutually helpful to all participating workers. No announcement of work in progress of investigation will be published without definite permission from the investigator. Your co-operation is essential to make the Bureau a success. Send any suggestions that will make the Bureau helpful. Send a report on your own investigations and tell us just what you would like to know about the research work being conducted by others.

1. What research investigations have you completed? Where were the results published?
2. What research investigation are you now conducting? When do you expect to have it completed? Where will it be published? May we publish a statement that the work is in progress or do you prefer to have no printed announcement made at present?
3. Send us the names and addresses of others who *may* be conducting research studies in educational geography. This notice may not come to their attention.

GEORGE J. MILLER, *Secretary*
State Teachers College,
Mankato, Minnesota

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